# **INSTRUCTIONS-PARTS LIST**



801-191 Rev. C SUPERSEDES B

This manual contains IMPORTANT WARNINGS and INSTRUCTIONS READ AND RETAIN FOR REFERENCE

# HYDRA-CLEAN<sup>®</sup> 2104G

MODEL 800-100 SERIES "A"

2150 psi (150 bar) OPERATING PRESSURE 2250 psi (155 bar) MAXIMUM WORKING PRESSURE



# WARNING

#### HIGH PRESSURE SPRAY CAN CAUSE SERIOUS INJURY. FOR PROFESSIONAL USE ONLY. OBSERVE ALL WARNINGS.

Read and understand all instruction manuals before operating equipment.

#### INJECTION HAZARD

Fluids under high pressure from spray or leaks can penetrate the skin and cause extremely serious injury, including the need for amputation.

*NEVER* point the spray gun at anyone or any part of the body.

NEVER put hand or fingers over the spray tip.

NEVER try to stop or deflect leaks with your hand or body.

ALWAYS have the tip guard in place when spraying.

#### MEDICAL TREATMENT

If any fluid appears to penetrate your skin, get EMERGENCY MEDICAL CARE AT ONCE. DO NOT TREAT AS A SIMPLE CUT.

Tell the doctor exactly what fluid was injected. For treatment instructions have your doctor call the NATIONAL POISON CENTER NETWORK (412)681-6669

#### AVOID COMPONENT RUPTURE

Even after you shut off the gasoline engine, there is high pressure in the pump, hose and gun until you release it by triggering the gun. So before removing the spray tip or servicing the unit, *always* shut off the unit *and* trigger the gun to release pressure.

Be sure that all accessory items and system components will withstand the pressure developed. *NEVER* exceed the pressure rating of any component in system. *NEVER* alter or modify equipment — your personal safety, as well as-the function of the equipment, is at stake.

Before each use, check hose for weak, worn or damaged conditions caused by traffic, sharp corners, pinching or kinking. Tighten all fluid connections securely before each use. Replace any damaged hose.

Do not use chemicals or agents which are not compatible with Buna-N and PVC or neoprene cover of hose.

Do not leave a pressurized unit unattended. Shut off the unit and release pressure before leaving.

FIRE

Do not spray flammable liquids. Do not operate the engine where combustible fumes or dust may be present.

GAS ENGINE PRECAUTIONS

*NEVER* fill fuel tank while engine is running or hot. Avoid the possibility of spilled fuel causing a fire. Always refuel slowly to avoid spillage.

*NEVER* operate engine in a closed building unless the exhaust is piped outside. The exhaust contains carbon monoxide, a poisonous, odorless and invisible gas, which, if breathed, may cause serious illness or possibly death.

*NEVER* make adjustments on machinery while it is connected to the engine; first remove the ignition cable from the spark plug. Turning over the machinery by hand during adjusting or cleaning might start the engine and machinery, causing serious injury to the operator.

*NEVER* run the engine with governor disconnected, or operate at speeds in excess of 3300 RPM load.

Precaution is the best insurance against an accident. When starting the engine, maintain a safe distance from moving parts of the equipment.

GENERAL

NEVER run unit with belt guard removed. Keep clear of moving parts when unit is running.

Observe detergent manufacturer's safety precautions. Avoid getting detergent or other liquids in your eyes. Follow the directions on the container regarding contact with eyes, nose, and skin, breathing fumes, etc. Always wear full goggles to protect your eyes from the spray as well as any debris dislodged by the spray. If necessary, wear gloves or other protective clothing. If antidotes or treatment are recommended, be prepared to use them.

DON'T spray toxic chemicals such as insecticide or weed killer.

# IMPORTANT

United States Government safety standards have been adopted under the Occupational Safety and Health Act. These standards — particularly the General Standards, Part 1910, and the Construction Standards, Part 1926 — should be consulted in connection with your use of airless spray equipment.

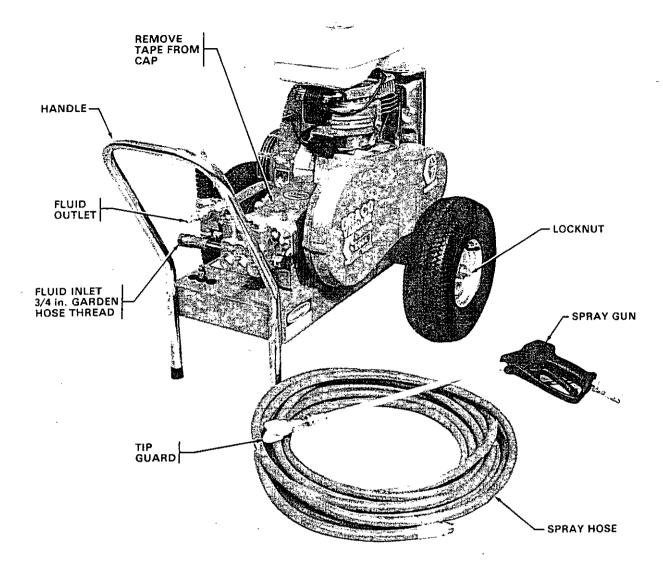


Fig 1

Refer to the engine instruction booklet provided with the unit.

#### Install Wheels and Handle

Slide the axle into the frame. Slide the wheels onto the axle and secure with the 1/2 inch locknuts provided.

Attach the handle with the 4 screws, nuts, flat washers and lockwashers provided.

#### Install Hose and Spray Gun

Connect the spray hose to the spray gun by inserting the pin at the end of the hose into the quick disconnect coupler on the gun. Connect the hose to the fluid outlet in the same way.

Remove the tape from the cap on top of the pump.

#### **Cleaning Accessories**

For spraying detergent or other cleaning solution, we recommend using a chemical injector kit. See Accessories and instruction manual 801-192 for installation and operation.

For removing rust and old paint we recommend using a

water sandblaster. See Accessories and instruction manual 801-190 for installation and operation.

#### **Connect To Water Supply**

#### ----- CAUTON-----

Before attaching to water supply, check local plumbing code regarding cross-connection to water supply.

Do not exceed 160° F (70° C) water temperature to pump in a direct supply system.

Connect a hose with at least a 3/4 in. (19 mm) ID from your city water supply to the unit's 3/4 in. garden hose threaded inlet. The supply hose should not be more than 50 ft. (15 m) long.

#### **NOTE:** For a direct supply system, your water source at the unit *must* have a flow rate of *AT LEAST 5 GPM (19 LITER/MIN).*

If your operating conditions are different from above, contact our Customer Service Department for assistance.

#### OPERATION

#### Startup

Before starting, be sure to read the safety warnings and setup instructions.

Check the oil and gasoline levels daily.

Turn on the water supply.

Trigger the gun to release any back pressure.

DO NOT wire or tie the gun trigger into the open or triggered position.

Set the choke and open the fuel valve.

**NOTE:** For easier starting, hold the gun trigger open while pulling the rope.

Put your foot on the frame or wheel to steady the unit when you pull the starter rope. Hold the gun in your left hand with the trigger open while starting the engine.

Grasp the starter rope grip and rapidly pull out the cord two or three feet (1 m). Repeat if necessary with the choke opened slightly. When the engine starts, immediately release the gun trigger. Open the choke gradually.

#### -CAUTION-

Never run the cleaning unit dry. Costly damage to the pump will result. Always be sure water supply is completely turned on before operating.

Inspect all connections for any leaks. Tighten if necessary.

#### Cleaning

For Hydra-Clean technique, see the Chemical Injector manual, 801-192.

For abrasive cleaning, see the Water Sandblaster manual, 801-190.

### -WARNING-

Follow these precautions when removing and installing nozzles:

- 1. Shut off the cleaning unit and trigger the gun to relieve pressure. Engage the trigger safety.
- 2. Keep the nozzle and the tube pointed away from you and everyone else.
- 3. Do not put your hand over the tip to push the nozzle into place. Grasp it from the side and keep your fingers away from the tip.
- 4. Do not let anyone else touch the spray valve while you are cleaning nozzles.
- 5. Be sure the slip ring is pushed forward to lock the nozzle in place before triggering the spray gun.

#### Shutdown and Care Of Unit

When unit is not in use, turn off water supply.

When shutting down for the day or weekend, shut off unit, shut off water supply valve, and trigger gun to release pressure. Wipe off the unit with a damp rag. Check the filter screen in the water inlet connection as often as necessary, at least daily. Do not operate the unit with the inlet and filter screen removed.

DO NOT try to adjust the unloader valve or change the engine speed. Changing these settings may cause excessive pressure, intermittent unloader operation, wasted fuel and increased wear on parts.

PUMP MUST NOT BE RUN DRY and must be drained of water prior to exposure to freezing temperatures. Use and store the unit where it will not be subjected to freezing temperatures. If water does freeze in the unit, thaw before trying to start. A 50% anti-freeze solution may be pumped prior to cold weather storage.

Use only spray tips that are matched to the unit to avoid excessive cycling and wear of the unloader valve. See ACCESSORIES.

#### -CAUTION-

Let a frozen pump thaw in a warm place. Don't pour hot water on a frozen pump. A sudden temperature change may crack the ceramic plungers.

Do not pump caustic materials.

Before extended storage, flush the pump with light oil.

Avoid dragging hose over an abrasive surface such as cement. This causes excessive wear and shorter hose life.

Clean the intake line strainer daily.

#### Lubrication and Care

Change the engine oil after every 100 hours of operation. Drain oil with engine warm. Engine requires 1 quart (0.96 liters) 30W oil. See separate instruction manual for maintenance procedures.

Fill pump crankcase to dot on oil gauge window with 25 oz. (0.75 liters) of crankcase oil (part no. 801-144) or equivalent SAE 40 weight hydraulic oil with antiwear and rust inhibitor additives. Change initial fill after 50 hour running period. Change oil every 3 months or at 500 hour intervals.

#### — WARNING —

*NEVER* alter adjustment or modify the unloader valve.

Altering or adjusting unloader *will not* increase performance of unit.

Service of the unloader must be performed only by qualified service personnel.

# TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION	
Engine Will Not Start Or Hard To Start.	No gasoline in fuel tank or carburetor.	Fill the tank with gasoline, open fuel shut-off valve. Check fuel line and carburetor.	
	Water in gasoline or old fuel.	Drain fuel tank and carburetor. Use new fuel and dry spark plug.	
	Choked improperly. Flooded engine.	Open choke and crank engine several times to clear out the gas.	
	Dirty carburetor air filter	Remove and clean.	
	Spark plug dirty or improper gap.	Clean, adjust the gap or replace.	
	Spray gun closed.	Trigger spray gun.	
Engine Misses Or Lacks Power	Partially plugged air filter.	Remove and clean.	
, cover	Spark plug dirty, wrong gap, or wrong type.	Clean, adjust the gap, or replace.	
	Incorrect ignition timing.	Time engine.	
Low Pressure	Worn nozzle.	Replace with nozzle of proper size.	
	Belt slippage.	Tighten or replace; use correct belts and replace both at same time.	
	Air leak in inlet plumbing.	Disassemble, reseal, and reassemble.	
	Relief valve stuck, partially plug- ged or improperly adjusted; valve seat worn.	Clean, and adjust relief valve; check for worn and dirty valve seats. Kit available.	
	Inlet suction strainer clogged or improper size.	Clean. Use adequate size. Check more frequently.	
	Worn packing. Abrasives in pumped fluid or severe cavita- tion. Inadequate water supply.	Install proper filter. Check flow available to pump.	
	Fouled or dirty inlet or discharge valves.	Clean inlet and discharge valve assemblies.	
	Worn inlet or discharge valves. Leaky discharge hose	Replace worn valves, valve seats and/or discharge hose.	
Pump runs extremely rough, pressure low.	Restricted inlet or air entering the inlet plumbing.	Proper size inlet plumbing; check for air tight seal.	
:	Inlet restrictions and/or air leaks. Stuck inlet or discharge valve.	Clean out foreign material, replace worn valves.	
	Leaking H.P. seals.	Replace seals.	
Water leakage from under the manifold.	Worn packing.	Install new packing.	
Water in pump crankcase.	May be caused by humid air condensing into water inside the crankcase.	Change oil at 3 month or 500 Hour intervals us- ing Graco Crankcase Oil (other approved oil every month or 200 hours) P.N. 801-144.	

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SERVICE

PROBLEM	CAUSE	SOLUTION
Frequent or premature failure of the packing.	Scored plungers.	Replace plungers.
	Over pressure to inlet manifold. Reduce inlet pressure.	
	Damaged or worn plungers.	Replace plungers.
	Abrasive material in the fluid be- ing pumped.	Install proper filtration on pump inlet plumbing.
	Excessive pressure and/or temperature of fluid being pumped.	Check pressures and fluid inlet temperature; be sure they are within specified range.
	Over pressure of pumps.	Reduce pressure.
	Running pump dry.	Do not run pump without water.
Strong surging at the inlet and low pressure on the discharge side.	Foreign particles in the inlet or discharge valve, or worn inlet and/or discharge valves.	Check for smooth lap surfaces on inlet and discharge valve seats. Discharge valve seats and inlet valve seats may be lapped on a very fine oil stone.

NOTE: A M11 and M30 metric wrenches are required for servicing pump.

#### PUMP

### Valves

#### Photo 1 and 2.

- 1) Remove the hex plug using an M30 wrench.
- 2) Examine o-ring under plug and replace if evidence of cuts or distortion.
- 3) Remove valve assembly including retainer, spring, valve and valve seat from valve cavity.
  - NOTE: Valve assembly may come apart during removal.
- 4) Replace valve parts with service kit (801-041) including retainer, spring, valve, valve seat, o-ring and back-up-ring.
- 5) Replace valve cover and torque to 75 ft-lb (100 N·m).

#### **Pumping Section**

Photo 3.

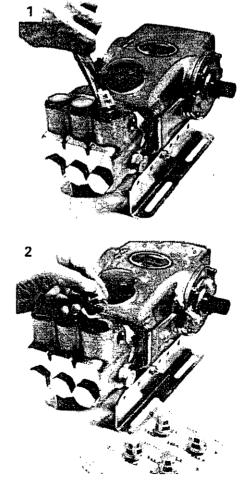
- 1) Remove the four (4) hex nuts from the manifold.
- 2) Separate the manifold from the crankcase.

**NOTE:** It may be necessary to tap manifold lightly with mallet to loosen.

#### - CAUTION: -

Keep manifold properly aligned with ceramic plungers when removing to avoid damage to either plungers or seals.

3) Carefully examine each plunger for any scoring and replace if necessary.



#### Plungers

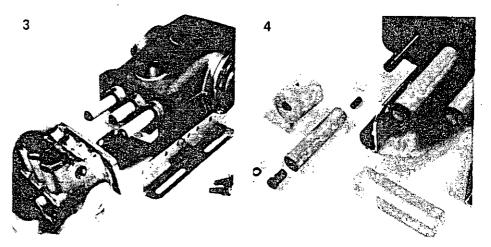
#### Photo 4.

- Using an M11 wrench, remove the plunger retainer.
- Slide out the seal retainer with oil wick and rubber barrier slinger.
- With a slight twisting motion, loosen the plunger from the plunger rod and remove.
  - NOTE: The stud may remain with the retainer when removed. Disassemble and screw stud into plunger rod fingertight.
- 4) Replace o-ring and back up ring on plunger retainer.
- 5) Saturate new oil wick by soaking in oil.
- 6) Install new plunger.
- 7) Replace plunger retainer and torque to 80 in-lb (9 N·m).
- 8) Install new oil wick in seal retainer.
- Replace barrier slinger over new plunger.
- Lubricate each plunger sleeve and carefully slide manifold onto crankcase.

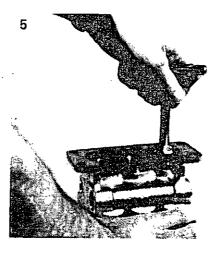
## Seals or V-Packings

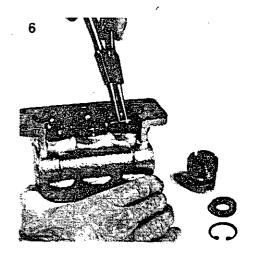
Photo 5,6,7 and 8.

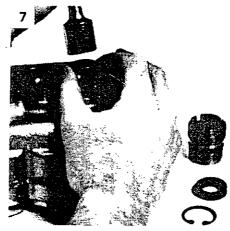
- 1) Remove C-ring from seal case.
- 2) Then remove the low pressure seal from the seal case.
- 3) Unscrew the seal case from the manifold using a special key wrench (801-044).
- Remove the high pressure seal and examine. Before replacing, lubricate ID and OD of new highpressure seal and press into manifold.
  - NOTE: A socket and extension may be used to pressure seal from manifold.
- 5) Install new o-ring on seal case and lubricate OD of o-ring.
- 6) Screw seal case into manifold.
- Lubricate ID and OD of low pressure seal and press into seal case.
- Replace C-ring holding low pressure seal in place.



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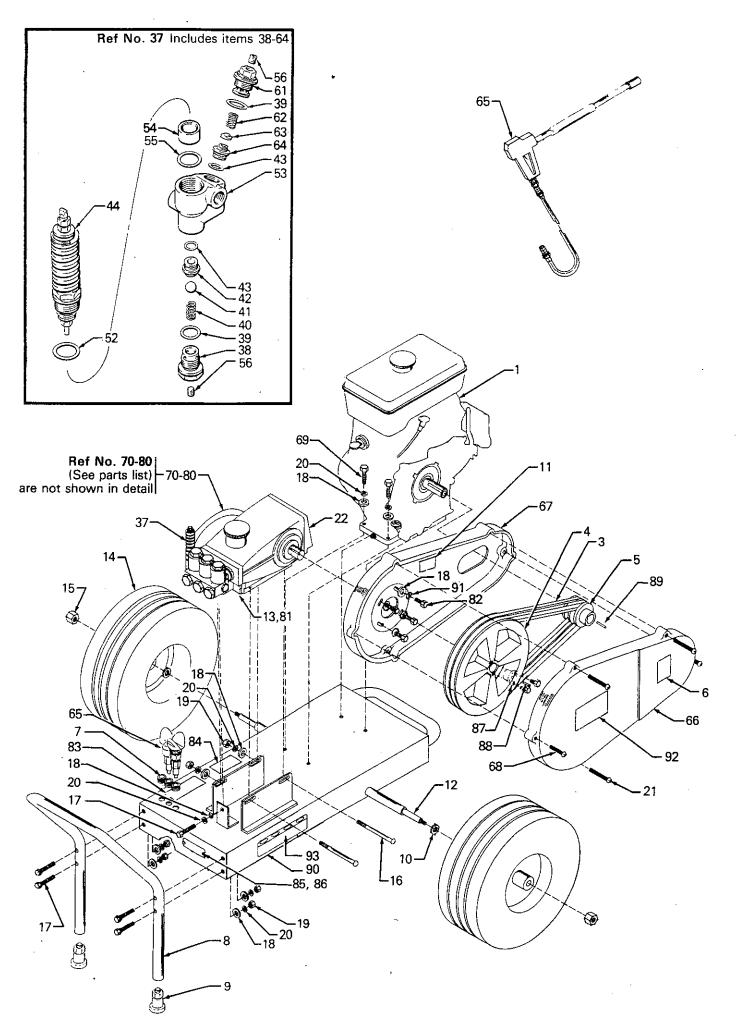


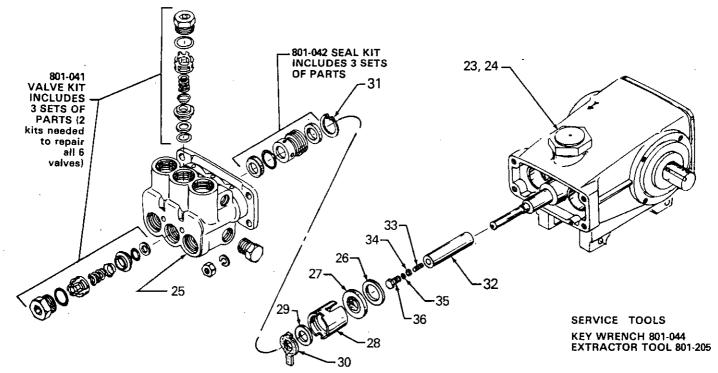


- Lubricate each plunger sleeve and carefully slide manifold onto crankcase.
  - NOTE: When replacing manifold onto plungers, extreme caution should be exercised to avoid damage to the seals.



- 10) Torque all four (4) bolts to 240 in-lb (27 N⋅m).
- **NOTE:** Carefully study the order of respective parts and note position of seals to assure proper reassembly and operation.





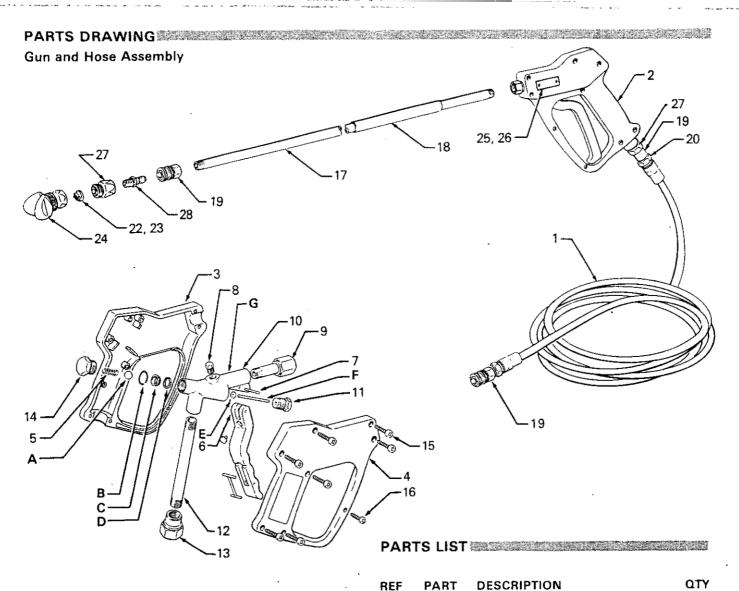
PARTS LIST 

	PART NO.	DESCRIPTION	<b>Ω</b> ΤΥ		PART NO.	DESCRIPTION	QTY
1	801-000	ENGINE	1	43	801-050	. O-RING	2
3	801-003	BELT, drive	2	44	800-012	. UNLOADER	1
4	801-004	PULLEY, pump	1	45	801-143	. TAG	1
3 4 5 6 7	801-005	PULLEY, engine	1	52	**	. GASKET	1
6	801-008	LABEL	1	53	801-060	. HOUSING	1
	801-012	GROMMET	3	54	801-061	. CYLINDER	1
8 9	801-013	HANDLE	1	55	801-062	. GASKET	1
9 10	800-015 801-235	ANTI VIBRATION FOOT	2 2	56	801-063	. PLUG	2 1
11	801-235		2	61	801-068	. HOUSING, valve	
12	801-017	AXLE	1	62	801-069	· · · · · · · · · · · · · · · · · · ·	1
13	801-018	TENSIONER, belt	Ì	63	801-070	. VALVE	1
14	801-019	WHEEL	2	64 65	801-071	. SEAT	1
15	801-020	LOCKNUT, hex, 1/2"	2	co	800-101	HOSE AND GUN ASSY, see gun detail	
16	801-021	CARRIAGE, BOLT, 5/16-18 x 4-3/4	2	66	801-085	for parts	
17	801-022	SCREW, hex hd, 5/16-18 x 1-3/4	5	67	801-086	COVER, belt guard BASE, belt guard	1
18	801-023	WASHER, flat, 1/4"	15	68	801-087	SCREW, mach, slotted, 1/4 -20 x 1-3/4"	
19	801-024	NUT, hex 5/16"	6	69	801-088	SCREW, mach. cross recessed, 5/16-18	
20	801-025	LOCKWASHER, 5/16"	11		001-000	1-1/2"	4
21	801-026	SCREW, mach, slotted, 1/4-20 x 2-1/2"	4	70	*801-090	COUPLER, male quick disconnect	1
22	801-001	PUMP, replacement parts		72	801-105	NIPPLE, straight, brass, 1/2 npt x 3-1/2"	
		Include items 23-36	1	73	801-106	TEE, brass, 1/2 npt	i
23	801-027	. CAP	1	74	801-236	NIPPLE, hex, steel, 1/2 x 3/8 npt	i
24	801-028	. O-RING	1	75	801-108	NIPPLE, hex, brass, 1/4 x 1/2 npt	i
25	801-267	DISCHARGE MANIFOLD	1	76	801-109	PLUG, hex, brass, 3/8 npt	1
26	*801-030	. WASHER	3	77	801-110	ADAPTER, 1/2" garden hose	1
27	*801-031	. SEAL	3	78	801-111	NUT, brass, garden hose adapter	1
28	*801-032	. RETAINER	3	79	801-112	SCREEN, inlet, 1/2"	1
29	*801-033	. WASHER	3	80	801-113	HOSE, cpld 1/2 npt(mbe), 17-1/2" lg	1
30	*801-034	. WICK	3	81	801-081	SCREW, mach, hex hd; M80 x 20 mm	2
31 32	*801-035 *801-036	. RING, retaining	3	82	801-082	SCREW, mach, hex hd; M6 x 30 mm	4
32	*801-036	. PLUNGER . STUD	3	83	801-129	LABEL, warning	1
33 34	*801-037	, STUD , RING, backup	3	84	801-130	LABEL, warning	1
35	*801-039	. O-RING	-	85	801-131	PLATE, serial	1
36	*801-040	. RETAINER, plunger		86	801-132	RIVET	2
37	801-084	UNLOADER ASSY.	1	87 88	801-135	HUB	1
•	001.004	Includes items 38-64	1	89 89	801-136 801-137	KEY, pulley	1
38	801-045	. CAGE, valve	1	90	801-137	KEY, pulley CHASSIS	
39		, O-RING	ź	90 91	801-138		ſ
40	801-047	SPRING	1	92	801-140	LOCKWASHER, 1/4" LABEL, identification	4
41	801-048	BALL	1.	92 93	801-140	LABEL, identification	1
42	801-049	, SEAT	i	30	001-141	CABEL, Waining	1
				*Reco	mmended	"tool box" spare parts. Keep on har	nd to

nmendea "tool box ' spare parts. Keep on hand to reduce down time. \*\*Included in repair kit.

Order parts by name and number. Always give the model number and series letter of the assembly for which you are ordering.

a.



Repair Kit 801-083 Includes items A, B, C, D, E and F

SERVICE

- 1. Remove the 8 screws from the body halves (3) and (4). See the Parts Drawing. Separate the body halves.
- 2. Remove the plug (14), spring (5) and ball (A) from the valve body (G).
- 3. Remove the snap ring (B). Then remove the valve seat (C) and o-ring (D).
- 4. Remove the sleeve nut (11) and o-ring (E) with the actuator rod (F).
- 5. After installing the new seat (C) and ball (A), tap the ball lightly with a hammer to assure a proper seating between the ball and seat.
- 6. Reassemble in reverse order, using the remaining new parts from the repair kit.

REF NO.	PART NO.	DESCRIPTION	ΩΤΥ
1	801-007	SPRAY HOSE, 3/8" ID, 50 ft.	
		(15 m) lg	1
2	800-017	SPRAY GUN, (replaceable parts	
		include items 3-16)	1
3	801-244	. HANDLE, left	1
4	801-245	. HANDLE, right	1
5 6 7	801-249	. SPRING	1
6	801-254	. LEVER	1
7	801-256	. NEEDLE	1
8	801-262		1
9	801-261	. DISCHARGE FITTING	1
10	801-247	. VALVE BODY	1
11	801-253	. GUIDE SLEEVE	1
12	801-246	. TUBE	1
13	801-263	. INLET FITTING	1
14	801-250	. CAP	1
15	801-264	. SCREW	/
16	801-265	. SCREW	1
17	801-134	TUBE, 32"	1
18	801-029	GRIP	
19	801-009	COUPLER, female quick disconnect	3
20	*801-090		1
21	801-073	HOUSING, nozzle	2
22	*801-010	TIP, blasting; 0°	1
23	*801-011	TIP, cleaning; 15°	2
24	801-074	GUARD, tip	2
25	801-076	PLATE, warning	2
26	801-077	RIVET	7 1 1 3 1 2 1 2 1 2 1 2 1 2
27	801-103		2
28	*801-091	COUPLER, male quick disconnect	2

Order parts by name and series letter of the assembly for which you are ordering.

\*Recommended "tool box" spare parts.

#### ACCESSORIES (Must be purchased separately)

CHECK VALVE 801-133

Prevent back up of contaminated water into fresh supply. Install upstream from pump.

WATER SANDBLASTER 800-103 For abrasive cleaning of stubborn dirt and paint. CHEMICAL INJECTOR KIT 800-102 For injecting harsh cleaning chemicals downstream from pump.

#### **TECHNICAL DATA**

ENGINE: HONDA MODEL G400QB6 4 cycle, single cylinder, air cooled, 10 hp.

- GASOLINE TANK: 1.58 gallon (6 liter) capacity
  - WATER PUMP: 2150 PSI (150 bar) max. pressure; 4 GPM (15 liter/min).

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- WETTED PARTS: Stainless Steel, Aluminum, Phenolic Plastic, Ceramic Liners, Nitrile Rubber.
  - WEIGHT: 180 lb (75 kg)(not including gasoline and motor oil).

OVERALL DIMENSION: Length: 32" (810 mm) Width: 28" (710 mm) Height: 25.5" (650 mm)

MAX. WATER TEMPERATURE: 160° (70° C)

INLET HOSE CONNECTION: 3/4" garden hose (f)

#### THE GRACO WARRANTY

Graco Inc. warrants all equipment manufactured by it and bearing its name to be free from defects in material and workmanship under normal use and service. This warranty extends to the original purchaser for a period of 12 months from the date of purchase and applies only when the equipment is installed and operated in accordance with written factory recommendations. This warranty does not cover damage or wear which, in the reasonable judgment of Graco, arises from misuse, abrasion, corrosion, negligence, accident, substitution of non-Graco parts, faulty installation or tampering.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective for examination by Graco to verify the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge, any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in workmanship or material, repairs will be made at a reasonable charge and return transportation will be charged.

THIS LIMITED WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES (EXPRESS OR IMPLIED) INCLUDING WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND OF ANY NON-CONTRACTUAL LIABILITIES INCLUDING PRODUCT LIABILITIES BASED ON NEGLIGENCE OR STRICT LIABILITY. EVERY FORM OF LIABILITY FOR DIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSS IS EXPRESSLY EXCLUDED AND DENIED.

EQUIPMENT NOT COVERED BY GRACO WARRANTY. Accessories or components of equipment sold by Graco that are not manufactured by Graco (such as electric motors, switches, hose, etc.) are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making such claims.

Factory Branches: Atlanta, Dallas, Detroit, Los Angeles, West Caldwell (N.J.) Subsidiary and Affiliate Companies: Canada; England; Switzerland; France; Germany; Hong Kong; Japan GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1444